Flint Regional Science & Engineering Fair

Inspiration, Invention, Innovation

TOPIC 10:
COMMUNICATION

Communication – You will…

- **Clearly explain your project:**
  - What your problem was – who it affects and how you intend to solve it
  - Explain your building and testing phase, including all the revisions
  - How your prototype works and solves the problem, and/or what still needs to be done
- **Communicate with others about your project:**
  - Talk with as many people as possible about your project
  - Create a display board and slide presentation on your project
- **At the end of this step, you will:**
  - Present your project – upload slides
  - Display your board at the FRSEF and talk with the judges and guest

NOTE: This slide deck may not include all the information needed for communicating your project. Check the website for the rules each year!

Communication – Figures, tables, graphs, pictures

- **Engineers and Scientist ♥*LOVE*♥ graphs.**
- **Pics, figures, and tables run a close 2nd.**
- All figures, tables, graphs, and pics must have *titles* – tell what it is!
- Graphs need *axes labeled*.
- *Legends* are useful to further explain graphs.
- Tables need their columns labeled.
- *Captions* (a brief explanation below the figure, table, graph, or pic) may need to be added.
- Make sure all figures, tables, graphs, and pics can stand on their own – a person can look only at them and be able to interpret them the same way you do.

Communication – Tables & Graphs

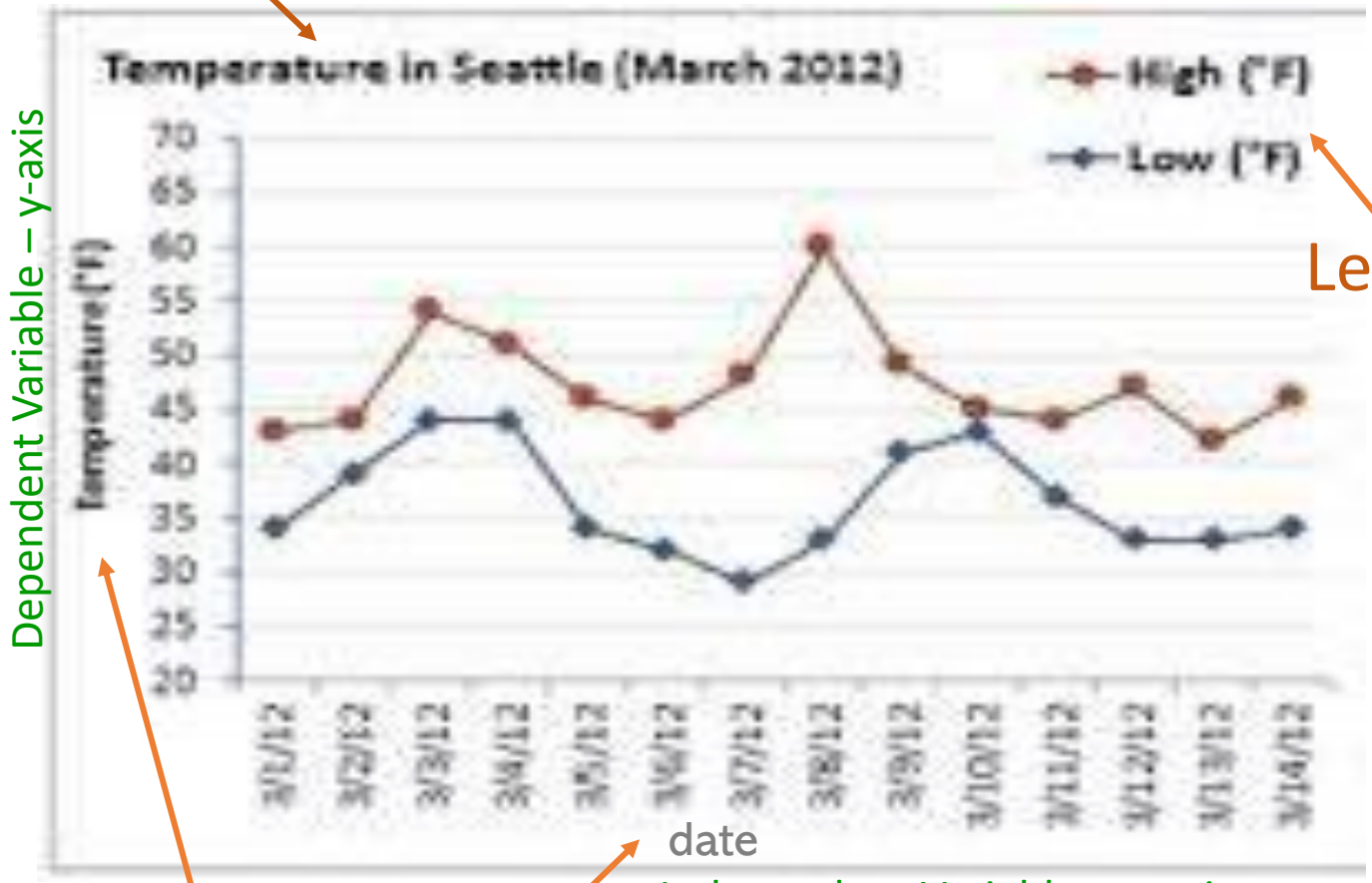
Titles

Column Labels

Temperature Data for Seattle		
Date	High (°F)	Low (°F)
3/1/12	43	34
3/2/12	44	39
3/5/12	54	44
3/4/12	51	44
3/5/12	46	36
3/6/12	44	32
3/7/12	48	29
3/8/12	60	33
3/9/12	49	41
3/10/12	45	43
3/11/12	44	37
3/12/12	47	35
3/13/12	42	33
3/14/12	46	34

High and Low Temperatures in Seattle, Washington, March 1 – 14, 2012.

Caption



Dependent Variable – y-axis

Legend

Axis Labels

date

Independent Variable – x-axis

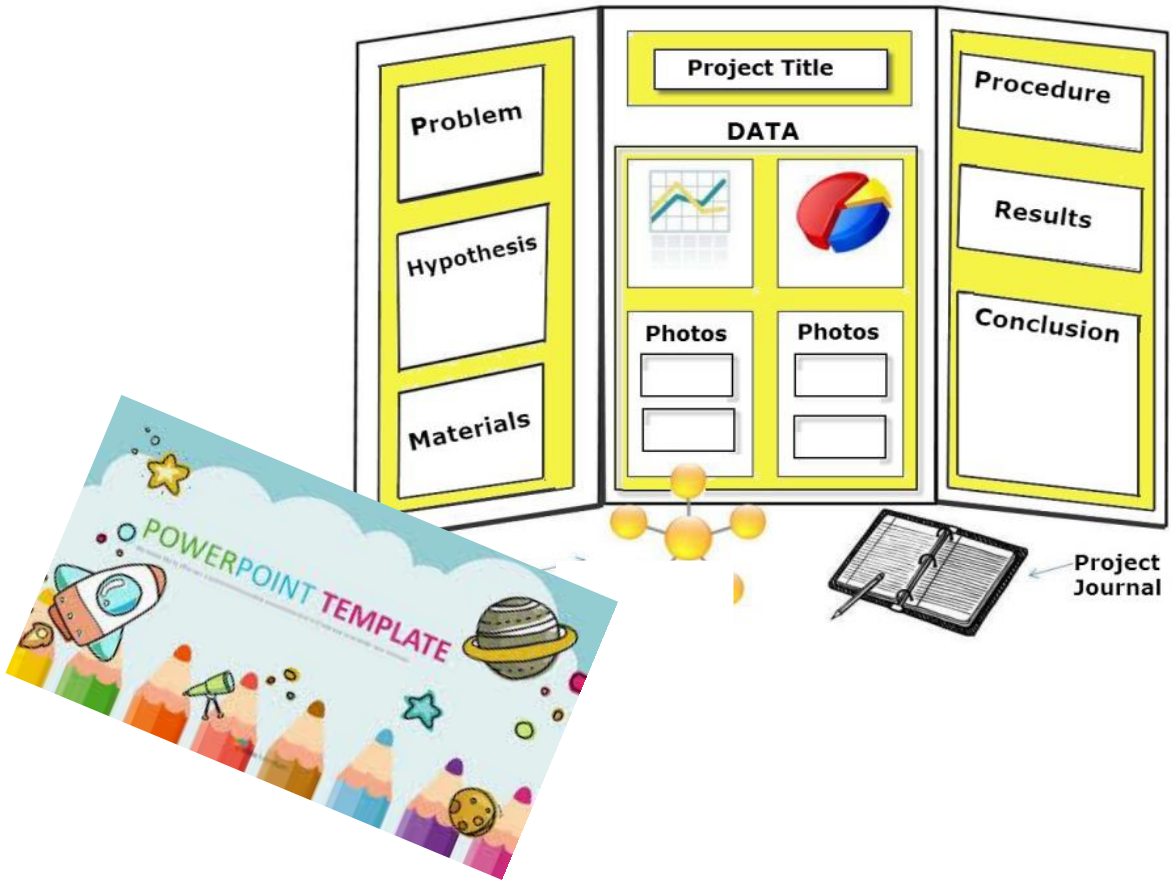
Communication – Photos, Images, Graphics,

- Photos and images can't be offensive or inappropriate (which includes anything dead or being dissected)
- All images must be properly cited ("Photograph taken by..." or "Image taken from..." or "Graph/Chart/Table taken from…")
- No logos (or other identifying marks) from commercial brands unless integral to the project and approved by the SRC (Scientific Review Committee)*.

Ask the FRSEF through our website. We will forward to the SRC (Scientific Review Committee).

Communication

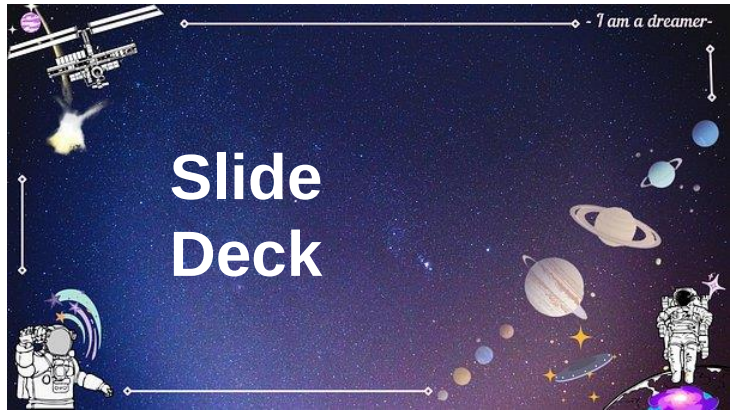
- **Required:**
  - Slide Deck – uploaded by due date
  - Display Board – brought to fair
- Suggested:
  - Journal – *very highly* suggested
  - Research Report
    - Senior – very highly suggested
    - Junior – suggested
    - Elementary – optional



NOTE: Templates for your slide deck and display board can be found on the FRSEF website.

Communication – Slide Deck

- 12 Slides Maximum
- PDF files are the only file type that will be accepted.
- Font and Font Size
  - Font should be easily readable (nothing crazy).
  - Minimum: 14 pt.; Recommended: 18 pt.
  - 10 pt. may be used for figure captions or photo credits.
- Slides may NOT include videos, hyperlinks, or animations.
- Background color must be light and type dark to promote readability.
- Use bullet points instead of paragraphs.
- Templates are given on the FRSEF website, but you do not have to be use them; they are provided as a starting point.
  - If using the template, please remove all instruction and input your material.

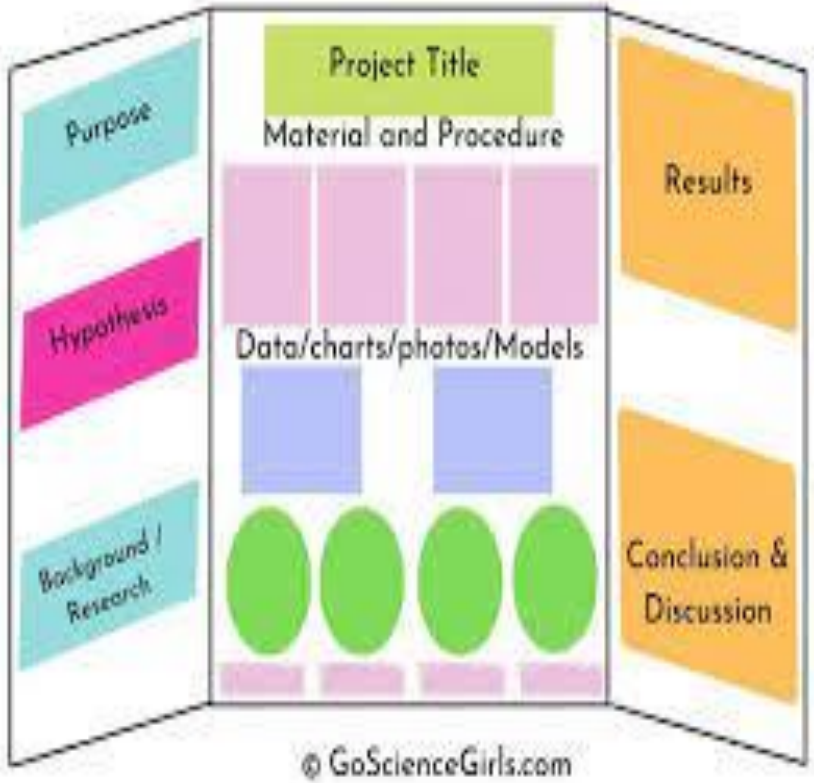


NOTE: This example doesn't follow the rules. Can you identify the problem?

NOTE: Only Senior and Junior participants will need to upload a slide deck.

Communication – Display Board

- Display Board Size
  - Elementary and Junior (3rd – 8th)
    - Max: 30” deep, 36” wide, 108” high
  - Senior (9th – 12th)
    - Max: 30” deep, 48” wide, 108” high
- Font and Font Size
  - Use a readable font - Arial, Times New Roman, Calibri, or similar.
  - Ideal font size depends on the font used.
  - Make sure your font is large enough that your *grandparents* can read it when standing in front of it!



Communication – Do NOT include on Board!

- No references to a mentor or research institution except in official paperwork
- No reference to your parents', including their status or professions
- No items for distribution except photocopies of an SRC approved abstract.
- No previous medals or awards
- No addresses, emails or social media address, QR codes, website links, telephone numbers…

Communication –
Do NOT display in front of Board!

- Living organisms
- Soil, sand, rock, cement and/or waste samples
- Taxidermy specimens
- Preserved vertebrate or invertebrate animals
- Food or drink – any kind (including water)
- Human/animal parts or fluids
- Plant materials (living, dead, or preserved)
- All chemicals *including water*
- All hazardous substances or devices (example: poisons, drugs, firearms, weapons, ammunition, reloading devices, grease/oil and sublimating solids such as dry ice)
- Items that may contain or have been in contact with a hazardous substances or devices

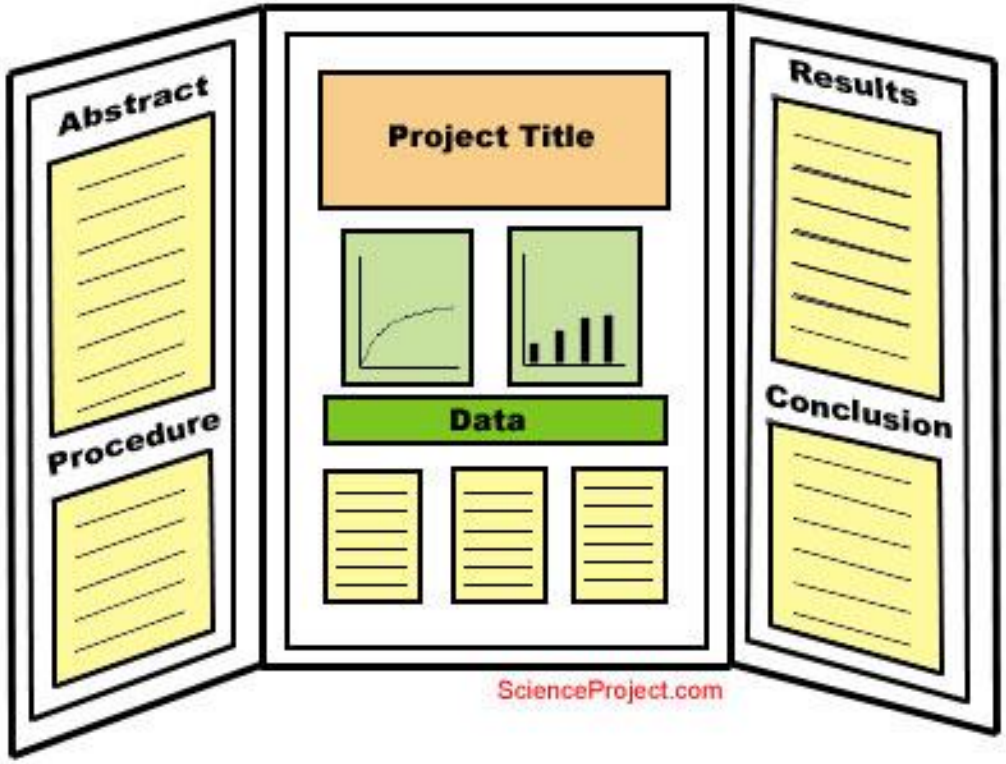
Communication –
Do NOT display in front of Board!

- Sharp items (for example, syringes, needles, pipettes, knives)
- Flames or highly flammable materials
- Batteries with open-top cells or wet cells
- Drones or any flight-capable apparatus unless the propulsion power source is removed
- 3D Printers unless the power source is removed
- Inadequately insulated apparatus capable of producing dangerous temperatures
- Any apparatus with belts, pulleys, chains, or moving parts with tension or pinch points that are not appropriately shielded
- Any display items that are deemed distracting (i.e., sounds, lights, odors, etc.)
- Handheld lasers

Communication –
It's not an Art project, but…

Make your presentation visually appealing!

- Use color with a purpose.
- Keep sizes and shapes balanced.
- Choose a font and stick with it – too many fonts in one slide or on one board doesn't work – it is distracting!
- Make sure everything is readable.
- Check Grammar and Spelling!!



Communication – Topics

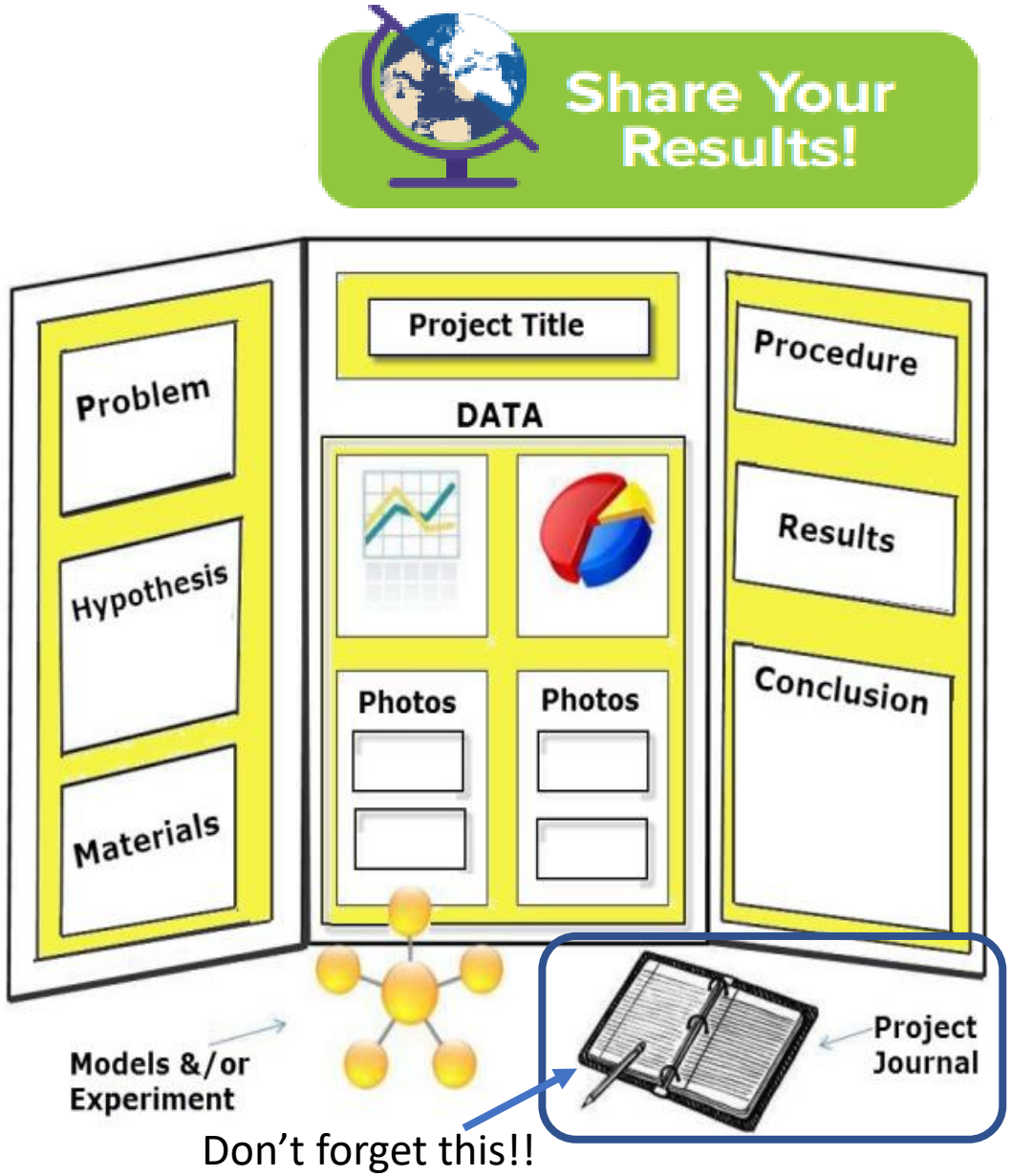
Both your **Slide Deck** and **Display Board** must include:

- Title
- Description of Problem/Background Research
- Engineering Goal and Criteria & Constraints
- Procedure
- Design – Prototype – Testing
- Results
- Discussion
- Conclusion

You may use your Slides to make your Display Board, making changes as needed.

Title

- Keep title short and concise!
  - Nice if it's catchy.
  - Font size should be larger.
- You can use a subtitle, if needed.
  - Subtitle can be a bit longer.
  - Font size should be a bit smaller
- Do NOT put your name on either your slide deck or *on the front* of your display board (on the back if good).
- Include the following on the Title slide of you Slide Deck.
  - Project ID (from zFairs, look under My Profile)
  - Category
    - EEC – Earth, Environment & Chemistry
    - LS – Life Science
    - PSE – Physical Science & Engineering
  - Division
    - (Elementary – 3-5), Junior 6-8, Senior 9-12)



NOTE: Many of the board examples show a segment for "Materials." Do not include this on yours.

Description of Problem/ Background Research

- What problem were you trying to solve?
- Why did you choose this problem?
- Why is this an important problem to solve?
- Explain what is known or has already been done to solve this problem, including work you built upon.
- Appropriate photos/graphics*

***NOTE:**

- You must have a photo release for photos of people other than yourself.
- Photographers must be given credit for their work.
- The source of all graphics must be given.
- See guidelines for appropriate photos.

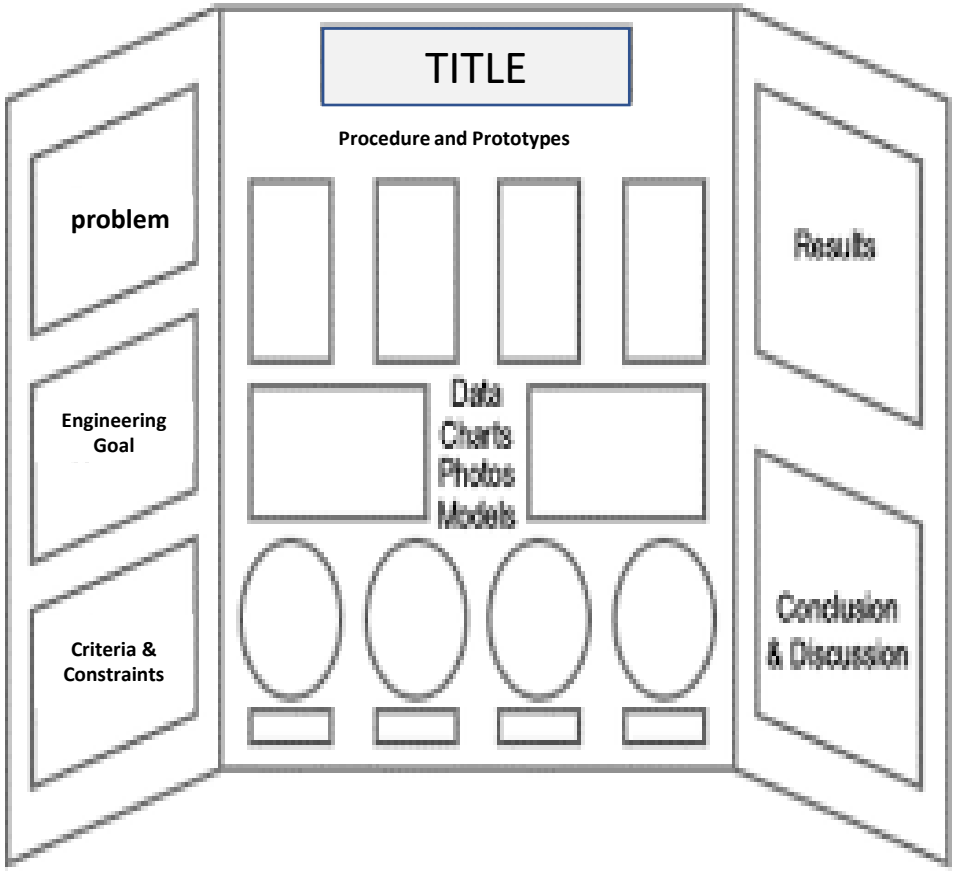
Engineering Goal and Criteria

Engineering Goal

- Concise statement of what you are attempting to achieve.

Criteria - Constrains

- What a successful project will achieve – one or two major goals.
- If there were any unusual or major constraints, list these also.

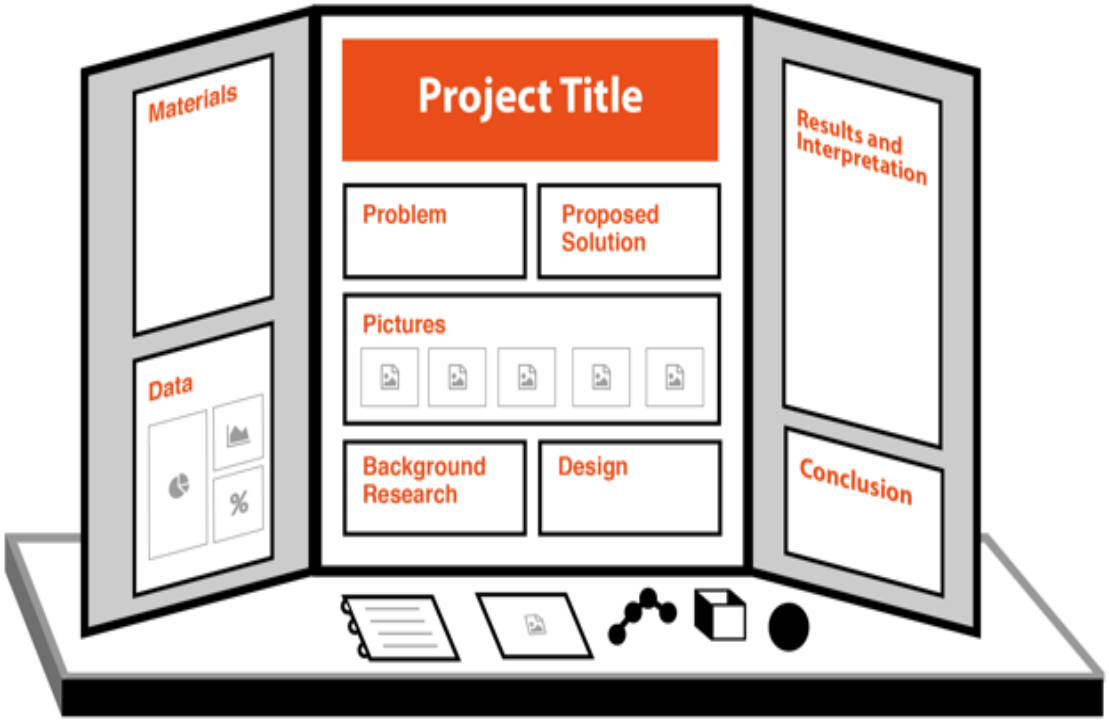


Procedure

NUTSHELL IT

- **Bullet Points – Not Paragraphs**

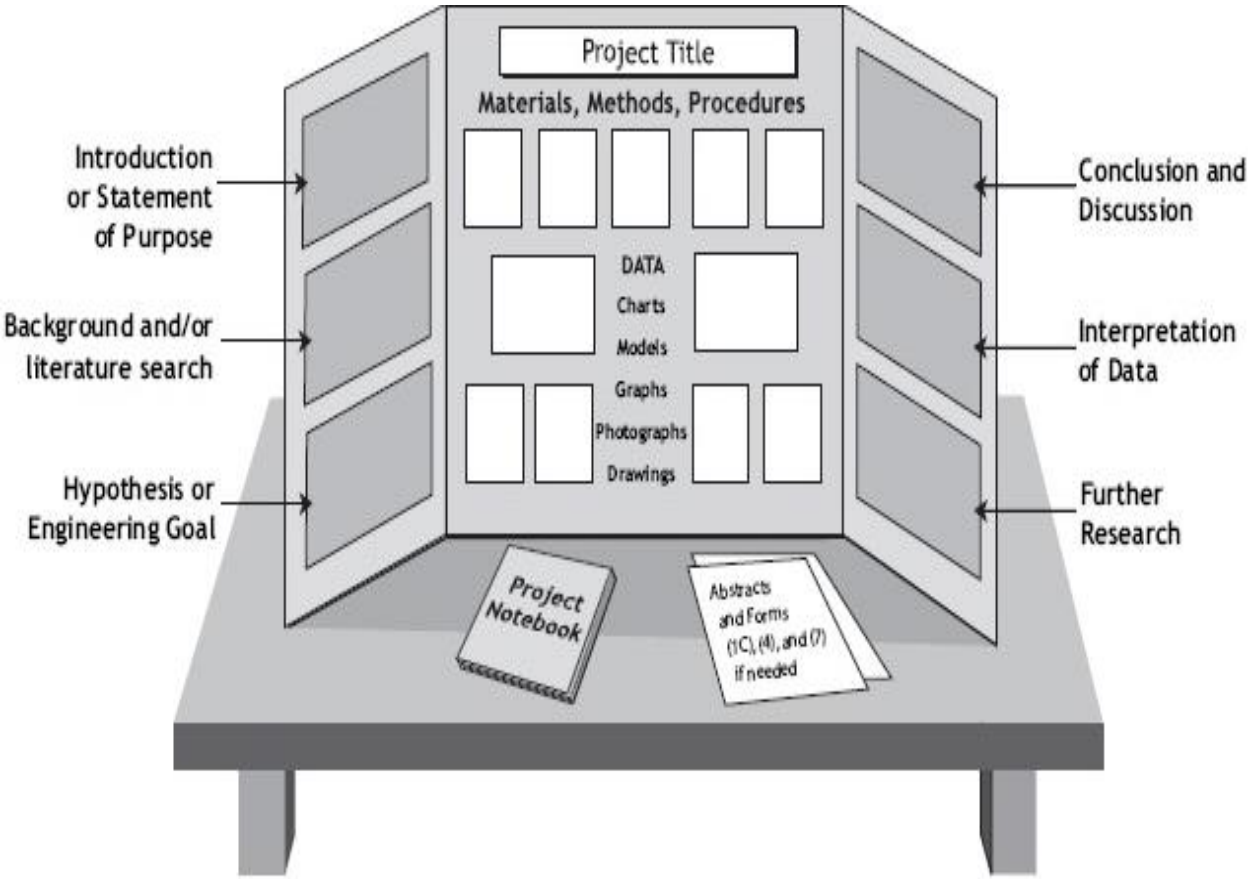
- What did you do? How did you design and produce your prototype?
- What were your testing procedures?
- What data did you collect and how did you collect that data?
- DO NOT give specific (ex., measurement)[1]
- DO NOT include a list of materials[1]
- Appropriate photos/graphics



[1] You SHOULD have all your materials and the specifics of your procedure – *in great detail* – in your journal. If you write a Research Report, it should also contain Your materials and procedure in detail.

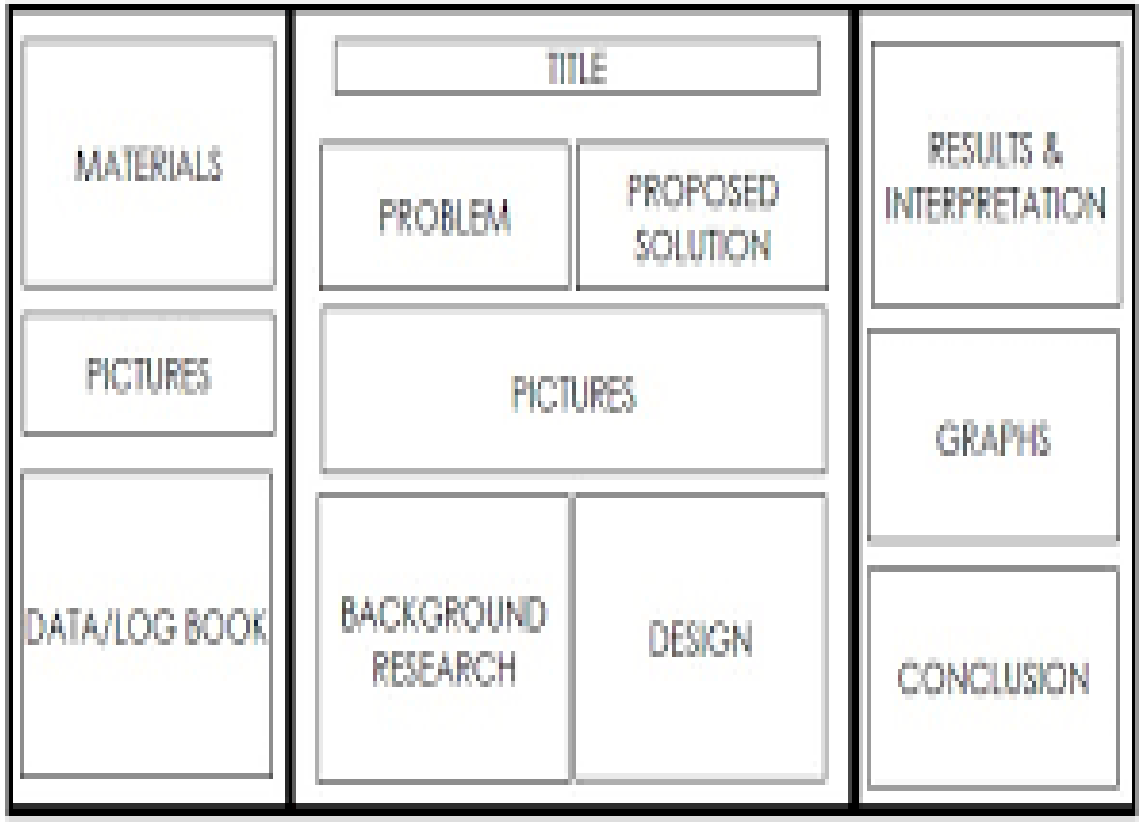
Design – Prototype - Testing

- Show how you worked through this phase of development.
- How did each prototype change?
- How did you test each prototype?
- Describe how you analyzed your data.
- How did you decide what to change with each prototype?
- *This is a GREAT place for Graphs and Photos!*



Results

- Did your final prototype meet your engineering goal/criteria?
- Include a summary of your data, tables, and figures that illustrate your results.
- Include relevant statistical analysis of the data.*
- Include appropriate photos/graphics



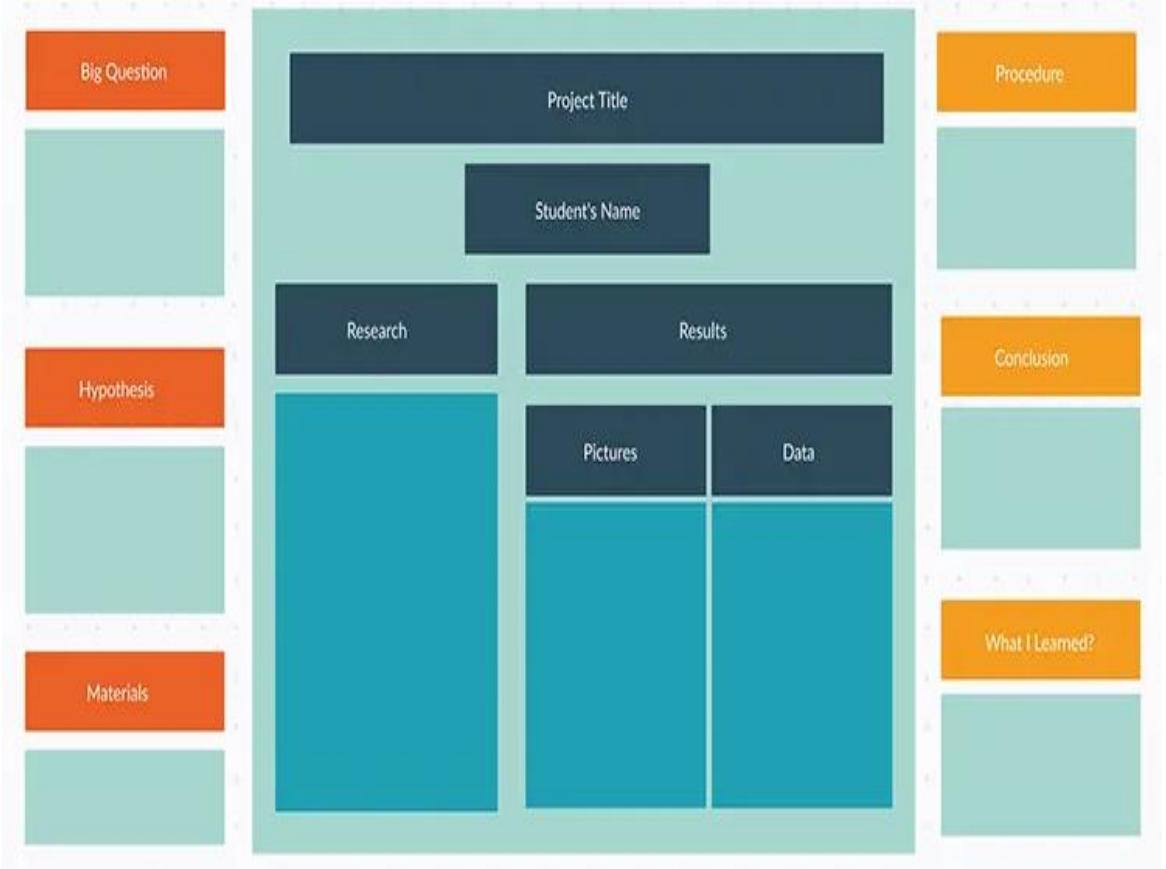
*Check the FRSEF website for a short course on statistics.

Discussion

- What do these results mean? You may compare your results with theories, published data, commonly held beliefs, and/or expected results.
- Did any questions or problems arise that you were not expecting? Were these problems caused by uncontrolled events? How did you address these?
- *How is your prototype an improvement or advancement over what is currently available?*
- Appropriate photos/graphics

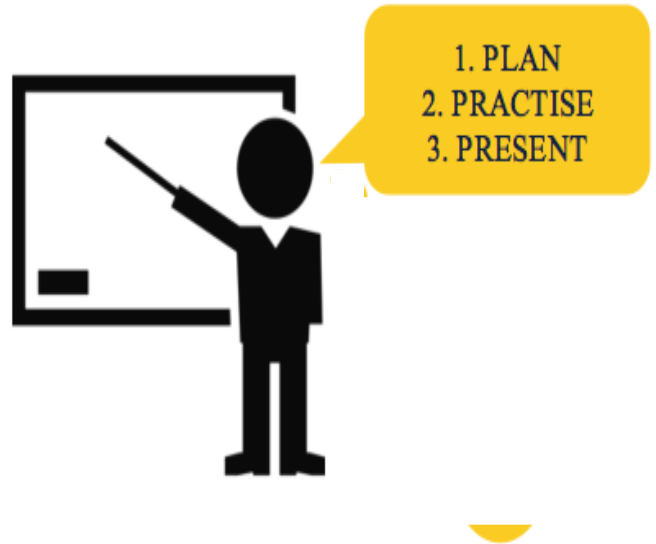
Conclusion

- Did your project turn out as you expected?
- Did you meet your criteria? Explain.
- What application(s) do you see for your work?
- What are the next steps for this project?
- What did you learn while doing this project?



Communication – Oral

PRACTICE, PRACTICE, PRACTICE



- Your practiced presentation should be no more than 5-6 minutes.
- The rest of the time is for judges to ask you questions.
- Look at the judges/audience.
- Practice in front of you parents, friends, siblings…
- Be sure you can explain your project so that an elementary student can understand it.
- Practice in front of someone who will give constructive criticism!
- Have your audience ask LOTS questions – make sure you can explain your project thoroughly.
- Encourage hard questions.

To Do:

- Finish any last-minute touch-ups on your project.
- Create your slide deck – upload to the website by the final due date (along with any remaining paperwork) - Junior and Senior project only.
- Create a Display Board and bring to the fair – Everyone!
- You may also bring to the fair (i.e., you *should* bring):
  - Your Log-book
  - Your Research Report (if you wrote one)
- Practice for your presentation!

Be proud of yourself for the work you have done!!